

<b>DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT</b> Housing—Federal Housing Commissioner		<b>STRUCTURAL ENGINEERING</b> <b>BULLETIN NO. 1124</b>
<b>TO: DIRECTORS, HOUSING</b> <b>DIRECTORS, MULTIFAMILY DIVISION</b> <b>DIRECTORS, SINGLE FAMILY</b>		<b>ISSUE DATE:</b> January 23, 1996
		<b>REVIEW DATE:</b> January 23, 1999
<b>SUBJECT:</b>	<b>1. Item Description</b> Shop Fabricated Building Component  <b>2. Name and Address of Manufacturer</b> 1001, Inc. Roosevelt Mail Station 123 Call Box 1007 Hato Rey, PR 00919	

This Structural Engineering Bulletin (SEB) should be filed with other SEBs and related bulletins on materials or products as required by prescribed procedures.

The technical description, requirements and limitations expressed herein do not constitute an endorsement or approval by the Department of Housing and Urban Development (HUD) of the subject matter, and any statement or representation, however made, indicating approval or endorsement by HUD is unauthorized and false, and will be considered a violation of the United States Criminal Code, 18 U.S.C. 709.

**NOTICE: THIS BULLETIN APPLIES TO DWELLING UNITS BUILT UNDER HUD HOUSING PROGRAMS. NON-HUD INSURED UNITS MAY OR MAY NOT BE IN CONFORMITY WITH THE REQUIREMENTS OF THE HUD MINIMUM PROPERTY STANDARDS.**

Any reproduction of this Bulletin must be in its entirety and any use of all or any part of this Bulletin in sales promotion or advertising is prohibited.

1. General:

This Bulletin sets forth specific requirements under the Technical Suitability of Products Program for determining the eligibility of housing to be constructed under HUD mortgage insurance or other HUD housing programs.

2. Scope:

This Bulletin applies only to the structural features of this method of construction. Final determination of eligibility is made by the appropriate HUD Field Office. Other factors considered by the Field Office will be valuation, location, architectural planning and appeal, mechanical equipment, thermal characteristics, and market acceptance. Consideration is also necessary to determine whether a specific property will qualify under the specific HUD program when constructed according to the method outlined in this Bulletin and where the structure is to be located.

In geographical areas subject to hurricanes, earthquakes, or other severe conditions affecting dwelling structures, the HUD Field Office shall require additional safeguards in proposed designs, when necessary.

3. Minimum Property Standards (MPS):

Compliance with HUD MPS will be determined by the HUD Field Office on the same basis as submissions involving conventional construction, except for the special features described in this Bulletin.

4. Inspection:

Field compliance inspections covering conventional items of construction and any special features covered in this Bulletin shall be made in accordance with prescribed procedures.

The appropriate HUD Field Office shall furnish a copy of a HUD field inspection report to Headquarters, Manufactured Housing and Standards Division, Office of Consumer and Regulatory Affairs, when there is:

- a. Evidence of noncompliance with any portion of the system of construction described in this Bulletin.
- b. Faulty shop fabrication, including significant surface defects.
- c. Damage to shop fabricated items or materials due to improper transportation, storage, handling, or assembly.
- d. Unsatisfactory field workmanship or performance of the product or system.
- e. Any significant degradation or deterioration of the product or evidence of lack of durability or performance.

Periodic plant inspections will be made by HUD Field Office or State Agency personnel in accordance with their prescribed procedures. Factory inspection reports shall be submitted to HUD Headquarters, upon request.

## 5. Certification:

The manufacturer named in this Bulletin shall furnish the builder with a written certification stating that the product has been manufactured in compliance with the HUD Minimum Property Standards (MPS), except as modified by this Bulletin. The builder shall endorse the certification with a statement that the product has been erected in compliance with HUD MPS except as modified by this Bulletin, and that the manufacturer's certification does not relieve the builder, in any way, of the responsibility under the terms of the Builder's Warranty required by the National Housing Act, or under any provisions applicable to any other housing program. This certification shall be furnished to the HUD Field Office upon completion of the property.

### OUTLINE DESCRIPTION, CATEGORY II CONSTRUCTION

#### GENERAL:

Completely shop fabricated field erected, building components for walls, floors and roofs of one- and two-story dwelling units, are furnished in this method of construction. The components are transported to the building site, where they are erected and assembled on conventional foundations.

All materials and methods of installation shall be in accordance with HUD Minimum Property Standards (MPS), Use of Materials Bulletins (UM), and Materials Releases (MR), except as may be specifically noted herein. Plumbing, heating and electrical systems are shop installed and field connected.

This Bulletin is based on a structural review of the shop fabricated components of the one- and two-story model of 1001, Inc., but may be considered applicable to all structurally similar units of this company. Foundation design and nonstructural items (such as architectural, plumbing, heating and electrical features) are not covered by this Bulletin.

#### SPECIFICATIONS:

Form HUD-92005, "Description of Materials" specifying only the structurally related items (Nos. 1 to 12, 14, 26 and 27), as originally submitted for technical suitability determination, describes the materials that shall be used in construction of housing units under this system of construction. Form HUD-92005, furnished with each application for use under HUD housing programs, shall include as a minimum the same structural materials.

DRAWINGS:

The following drawings by 1001, Inc. shall be considered an integral part of this Bulletin:

<u>Drawing No.</u>	<u>Date</u>	<u>Description</u>
A-1	1/18/94	First Floor Plan
A-2	1/20/93	Second Floor Plan
A-3	1/20/93	Elevations
A-4	1/20/93	Elevations
A-5	1/20/93	Sections
S-1	1/17/94	Footing Plan
S-2	1/17/94	Structure-Second Floor Plan
S-3	1/20/93	Structural Drawings
S-4	1/17/94	Structural Details
S-5	10/30/91	Details
S-6	1/20/93	Details
S-7	1/18/93	Details
S-8	1/18/93	Details
S-9	1/18/93	Details

The Builder shall submit construction drawings to the HUD Field Office with each application under HUD housing programs, which shall include the same or similar structural features as shown on the drawings listed above. Copies of these listed drawings shall also be furnished to the HUD Field Office by the Builder upon request.

SPECIAL CONSTRUCTION FEATURES

Composite building panels of 4 feet x 8 to 12 feet in a three dimensional frame formed by a 2-inch-thick expanded polystyrene foam (EPS) embedded with series of No. 10 gauge zig-zag wire bended in 60 degree angles so that it is 3 inches in height and 4 inches from one zig-zag to the other, covered on each side by a layer of No. 10 gauge welded wire mesh 4 inches square (spacing of longitudinal and transverse wires) and 1 1/2-inch thick portland cement plaster resulting in a finished wall thickness of at least 5 inches.

1. Wire frame: Welded in accordance with AWS D1.1, ASTM A-82, and ASTM A-185 using No. 10 gauge wire, with minimum  $f_y=65000$  psi.
2. Expanded Polystyrene or Polyurethane foam: Foam shall be 2 inches thick with an approximate density of 1.0 to 1.5 pcf.
3. Portland Cement Plaster: Mixture of Portland Cement Type II and aggregate shall be in accordance with Table No. 25 F of the Uniform Building Code. Plaster shall have a minimum 28 day compressive strength of 3000 psi. Portland Cement Aggregate and natural sand shall comply with ASTM C-150, ASTM C-144, and ASTM C-35 respectively.

Fire Resistance Requirements:

The thickness of Portland Cement sprayed concrete facing on each side of the panel shall be 1 1/2 inches.

Foam plastics shall have a maximum flame spread rating of 25 and a maximum smoke-developed rating of 450 when tested in accordance with ASTM E-84. The interior of the building shall be separated from the foam plastic by an approved thermal barrier of fire-resistive material having a finish rating of 15 minutes when tested in accordance with ASTM E-119.

Caution shall be exercised in the use of foam plastics. Foam plastics when exposed or unprotected may, under some circumstances, produce rapid flame spread, quick flashover, toxic or flammable gasses, dense smoke and intense and immediate heat, and may present a serious fire hazard. The material shall not be used where directly exposed. The manufacturer of foam plastic or the Society of the Plastics Industry, Inc., shall be consulted for instructions to minimize the risk in the use of these products in manufacture and in construction.

DESIGN AND CONSTRUCTION REQUIREMENTS:

Design Loads: The method described in this Bulletin is based on maximum design loads of 20 psf for snow, Seismic Zone 3 and a Basic Wind Speed of 105 mph and Exposure C (ASCE 7-88). The Builder shall submit structural calculations to the local HUD Office if housing units are to be located in geographical areas where these conditions are exceeded.

MANUFACTURING PLANT:

Housing units covered under this Bulletin will be produced in the following plant:

1001, Inc.  
Building T-1318-0-80  
Urbanizacion Industrial Ceiba Oeste  
Solar 5, Barrio Chupacallos  
Carr. PR 978, Km. 0.7  
Ceiba, PR 00735  
Telephone: (809) 885-4004

The Caribbean HUD Office will inspect this plant in accordance with prescribed procedures.

QUALITY CONTROL:

The appropriate HUD Field Office in whose jurisdiction the manufacturing plant is located shall review and approve plant fabrication procedures and quality control program, and shall report to Headquarters in accordance with outstanding instructions. The quality control program shall include field erection and supervision by 1001, Inc.

RECORD OF PROPERTIES:

The manufacturer shall provide a list of the first ten properties in which the component or system described in this Bulletin is used. The list shall include the complete address, or description of location, and approximate date of installation or erection. Failure of the manufacturer to provide HUD with the above information may result in cancellation of this Bulletin.

NOTICE OF CHANGES:

The manufacturer shall inform HUD in advance of changes in production facilities, transportation, field erection procedures, design, or of materials used in this product. Further, HUD must be informed of any revision to corporate structure, change of address or change in name or affiliation of the prime manufacturer. Failure of the manufacturer to notify HUD of any of the above changes may result in cancellation of this Bulletin.

EVALUATION:

This SEB shall be valid for a period of three years from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this SEB shall apply for a renewal or revision 90 days prior to the Review Date printed on this SEB. Submittals for renewal or revision shall be sent to HUD Headquarters. Appropriate User Fees shall be sent to:

U. S. Department of Housing and Urban Development  
Technical Suitability of Products Fees  
P. O. Box 954199  
St. Louis, MO 63195-4199

The holder of this SEB may apply for revision at any time prior to the Review Date. Amendments or minor revisions may be in the form of a supplement.

If the Department determines that a proposed renewal or supplement constitutes a revision, the appropriate User Fee for a revision will need to be submitted in accordance with Code of Federal Regulations 24 CFR 200.934, "User Fee System for the Technical Suitability of Products Program", and current User Fee Schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of the SEB. HUD will notify the manufacturer that the SEB may be canceled when:

1. conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system,
2. the manufacturer has changed its organizational form without notifying HUD, or
3. the manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice of the specific reasons for cancellation, and the opportunity to present views on why the SEB should not be canceled. No refund of fees will be made on a canceled document.

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